

# WIRE DRAG SURVEYS, PACIFIC COAST, 1934-1937

by

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The results of the wire drag work along the Pacific Coast during the past four seasons have proved conclusively that the best hydrographic surveys in such areas are not complete until supplemented by wire drag work. In this time 275 shoals have been located by a drag in areas covered by modern hydrographic surveys. At least 75 per cent of these shoals were found in areas where little or no indication of their existence was given by the hydrographic development.

The project of wire dragging the Pacific Coast of the United States was begun by the U.S. Coast and Geodetic Survey in 1934 with the *Ship Guide*.

The survey is now in its fourth season, 1934 to 1937 inclusive. Prior to the 1937 field season, wire drag surveys had been made off several sections of the coast, amounting in all to 325 nautical miles in four separate areas. The work was begun near Point San Pedro, California, just south of the entrance to San Francisco Bay, and extended southward to Port San Louis in San Luis Obispo Bay. This did not include the area off the sand beaches in Monterey Bay, where wire dragging was considered unnecessary. It represents 180 linear miles of wire drag surveys. The dragging of the coastal waters about the shore of San Clemente and Santa Catalina Islands in southern California represents another 86 nautical miles. With the exception of about six miles south of Rockport, California, the continuous section from Punta Gorda to Fort Bragg represents an additional 55 miles. The fourth area dragged was in the vicinity of Chetco Cove, Brookings, Oregon, and included about 4-1/2 nautical miles.

Two 65-foot towing launches with sleeping accommodations for fifteen men, and one 30-foot tender, comprised the floating equipment. Sturdy launches are required because of the exposed areas and lack of good anchorages. The wire drag equipment varies little from that specified and described in Special Publication No. 56, (1) except for the large end buoys. It was found that an old style 55 gallon water boiler was identical in buoyancy, proved easier to handle, and offered less resistance to the water than the end buoys shown in Special Publication No. 56. No towing bridle is used, and the ground wire is connected directly to the towline. Dual control has been used throughout the survey, i.e., each of the towing launches takes its own position and locates its own end buoy. Drag lengths as long as 12,000 feet have been used successfully. For the longer lengths of drag it has been found that a 65 per cent effective width gives best results. An effort to get more effective width increases lift and decreases speed. Had the customary practice of dragging a strip with very few differences in lengths of uprights been followed, there would have been much less progress, as adverse weather conditions on this coast make it practicable to secure satisfactory results on comparatively few days. The depths vary from 24 to 30 feet inshore to 30 fathoms offshore and it is necessary to cover as great a width as possible in one strip. To do this, the uprights are set at depths ranging from 20 to 85 feet, with a maximum difference in the lengths of uprights of adjoining sections not exceeding twelve feet, i.e., 2-1/2 per cent of the width of section, which is either 400 or 500 feet.

During the season of 1937, two widely separated areas were wire dragged, one off Cape Blanco, Oregon, and the other off Cape Mendocino, California.

The Cape Blanco and Port Orford area was wire dragged at the request of the U.S. Engineer Corps, because of a proposed breakwater to be built at Port Orford. Although this area had been resurveyed recently by ordinary hydrographic methods, a total of 56 heretofore unknown rocks were located by wire drag. Many were relatively unimportant, but several were hazardous, and one was extremely dangerous to coastwise shipping. The latter, (a very small pinnacle, very difficult to locate even after the drag had caught upon it), was found about 50 feet off the end of the lumber company's dock at Port Orford, with a least depth of 16-1/2 feet

(1) HAWLEY, J. H., "Construction and Operaiton of the Wire Drag". U.S.C. & G. Survey Special Publication N° 56.

over it at mean lower low water. Whether or not this rock would ever have been found by ordinary hydrographic methods is doubtful. It is a remarkable fact that vessels drawing 20 feet or more have been maneuvering around it for several years without hitting it, since its position is such that in mooring to the dock, a vessel turning around on its anchor must pass over the rock. Acting on the findings of the Coast and Geodetic Survey the lumber company, which ships from Port Orford, blasted this rock out immediately.

Upon completion of the surveys off Cape Blanco, the wire drag operations were moved to the vicinity of Blunt's Reef, off Cape Mendocino, California. Practically all shipping, whether north or south bound, makes Blunt's Reef Lightship a turning point. For this reason, this area is one of the most important and congested on the entire coast. Because of the heavy seas and fog prevalent for a large part of the year, and the broken and rocky character of the bottom with numerous dangers inshore from the lightship, it is also one of the most hazardous.

Until the latter part of the nineteenth century, a great many northbound ships used the passage inside Blunt's Reef to avoid the heavy seas encountered on the stretch from Punta Gorda to around Blunt's Reef. However, the frequency of accidents due to vessels striking rocks, as well as the uncertainty as to whether or not these dangers were charted, resulted in underwriters refusing to insure cargoes and vessels using this passage. Anyone familiar with this stretch of coast knows that a safe passage inside Blunt's Reef would be a boon to the smaller steam schooners and yachts beating north against the prevailing heavy northwest winds of summer. The wire dragging of this area, in order to prove once for all whether or not a safe channel exists, was therefore considered of primary importance. The greater portion of the Blunt's Reef area has now been dragged, and a total of 33 previously unknown pinnacle rocks located. The accompanying illustration demonstrates graphically that several of these pinnacles constitute grave present dangers, and many more might prove to be hazardous if the new channel, mentioned later, is used.

The group of rocks lying three to four miles northward of Blunt's Reef Lightship is on the direct steamer route to Humboldt Bay. Of this group the 28-foot rock is, of course, the most dangerous. Considering the prevalent heavy swells, one wonders why, as yet, no vessel has reported striking it. The 20-foot shoal (appearing as the southernmost in the illustration) is definitely hazardous, since many of the northbound steam schooners parallel the shore to this vicinity, turn out, head for the lightship, and pass between the lightship and Blunt's Reef.

An inside channel has now been dragged to a depth of 35 feet or more, showing a safe passage at least one mile in width. Most of the unknown dangers found would not have been located by ordinary hydrographic methods, regardless of the spacing of lines used. This may be seen on the accompanying illustration, which is a section of U. S. Coast and Geodetic Survey Chart No. 5795, where many of these rocks are shown rising from deep water without indication. It is believed that, if buoys are placed at strategic points, a safe passage exists for vessels drawing up to 24 feet. Vessels able to use this channel would save from 4 to 8 miles in distance, depending upon destination, and would avoid the more exposed outer area. The proposed channel is indicated by dashed lines on the reproduced chart section.



124° 30'

25

DRAGGED AREA

# WIRE DRAG SURVEY 1937

Soundings in Fathoms

